

General Disclaimer

One or more of the Following Statements may affect this Document

- This document has been reproduced from the best copy furnished by the organizational source. It is being released in the interest of making available as much information as possible.
- This document may contain data, which exceeds the sheet parameters. It was furnished in this condition by the organizational source and is the best copy available.
- This document may contain tone-on-tone or color graphs, charts and/or pictures, which have been reproduced in black and white.
- This document is paginated as submitted by the original source.
- Portions of this document are not fully legible due to the historical nature of some of the material. However, it is the best reproduction available from the original submission.



AUBURN UNIVERSITY

**IMPLEMENTATION OF ALABAMA
RESOURCES INFORMATION SYSTEM**

ARIS

(NASA-CR-150904) IMPLEMENTATION OF ALABAMA
RESOURCES INFORMATION SYSTEM, ARIS
Final Report, 20 Dec. 1976 - 15 Dec. 1978
(Auburn Univ.) 56 p HC A04/MF A01 CSCL 08F

N79-16328

Unclas
G3/43 13147

Final Report
Contract NAS8-32215

20 December 1976 - 15 December 1978

SCHOOL OF ENGINEERING

**Departments of Industrial Engineering
and Mechanical Engineering**

Under Contract With

**NATIONAL AERONAUTICS & SPACE ADMINISTRATION
NAS8-32215**

**ALABAMA DEVELOPMENT OFFICE
ALA-AU-X996-1004-2
ALA-ARC-TENN-TOM 77-99**

10 December 1978



AUBURN UNIVERSITY

IMPLEMENTATION OF ALABAMA
RESOURCES INFORMATION SYSTEM

ARIS

FINAL REPORT
CONTRACT NAS8-32215

20 December 1976 - 15 December 1978

SCHOOL OF ENGINEERING

Departments of Industrial Engineering
and Mechanical Engineering

Director
B. E. Herring

Under Contract With

NATIONAL AERONAUTICS & SPACE ADMINISTRATION
NAS8-32215

ALABAMA DEVELOPMENT OFFICE
ALA-AU-X996-1004-2
ALA-ARC-TENN-TOM 77-99

10 December 1978

TABLE OF CONTENTS

| | |
|---|----|
| Introduction | 1 |
| Information Dissemination | 1 |
| Data Acquisition | 2 |
| Software | 6 |
| Government Furnished Equipment | 12 |
| Future | 12 |
| Appendix A: ARIS CARPDAC Data Bases | 14 |
| Appendix B: Pictures of ARIS Use | 16 |
| Appendix C: Instructions for Remote Access to the ARIS Census Data Base Operating Procedures | 33 |
| Appendix D: Instructions for Terminal Input to ARIS AUTOMAP Processing | 41 |

I. INTRODUCTION

This report provides a major period summary of the activity related to the development of ARIS - Alabama Resources Information System. The time period covered is from December 1976 through the present. The last major report was dated 15 September 1976 and was devoted to documentation of system developments through that date.

Work since late 1976 has been directed towards the development of data bases, system simplification for user access, and making information available to personnel having a need to use ARIS or in the process of developing ARIS type systems. The report is structured to provide a history of the accomplishments and findings since late 1976.

II. INFORMATION DISSEMINATION

A number of presentations have been made concerning both the status and use of ARIS. These include:

1. The Earth Resources-Regional Transfer Activity Contract Review at George C. Marshall Space Flight Center on 15-16 February 1977.
2. Central Alabama Chapter of the American Institute of Industrial Engineers at Auburn University on 6 December 1977.
3. Region IV '78 Planning Conference, hosted by the Department of Housing and Urban Development in Atlanta on 9-11 January 1978. This was attended by all southeastern state and many regional planning groups (sub-state).
4. Land Use/Land Cover Information Workshop, hosted by the Alabama Development Office in Montgomery, Alabama on 25-26 January 1978. This was attended by all regional (sub-state) planning groups in Alabama as well as several State agencies such as the Alabama Highway Department, Alabama Water Improvement Commission, and the Alabama Geological Survey of Alabama. Representatives of the U. S. Geological Survey, the National Cartographic Information Center, and the Corps of Engineers also attended.

In addition, a complete package of software developed to utilize the Digital Terrain tapes acquired from the National Cartographic Information Center has been forwarded to Mr. Frank Miller at Mississippi State University to aid his group in converting their terrain material into a usable form. The State of Florida, Division of State Planning, has also expressed interest in acquiring this procedure.

III. DATA ACQUISITION

1. Much data has been acquired during the report period. A fair quantity has resulted from intra-agency agreements worked out by ADO. In essence, these arrangements have consisted of ARIS/ADO services in return for encoded data. Cooperative arrangements have included:
 - a. Central Alabama Regional Planning and Development Commission (CARPDAC) - Data for a large number of data bases has been encoded by this agency. A list of the various data bases so acquired is included as Appendix A. A rather involved mutual assistance relationship has evolved. ARIS procedures have received extensive testing through this period, permitting several weak points, primarily in communications, to be noted and corrected. Some of the pictures included in Appendix B resulted from CARPDAC data encoding and ARIS processing.
 - b. U. S. Department of Agriculture - Soil Conservation Service (SCS) - SCS has collected and encoded 100 year flood plain data for the State of Alabama. The material was mapped onto county highway maps and then digitized. From this material, ARIS data bases have been created. Separate data bases exist for each county as well as one combined for the entire State. Figure 1 shows a plotter prepared display of the State base.

In addition, SCS has been conducting detailed soil testing on a county by county basis. Testing by either SCS or TVA has been completed for approximately half of the State. Encoding, digitizing, and data base creation have been completed for two counties; Elmore and Montgomery. In return, ARIS procedures have been used to map these counties to display prime farmlands and other agricultural lands. Figures 2 and 3 illustrate plotter produced displays of prime farmlands and other agricultural lands, respectively, in Elmore County.
 - c. Bureau of Land Management (BLM) - BLM has indicated a need for slope information in one section of the State. As a result of this need, slope calculation procedures have been developed. Slope computations will be made shortly and then mapped. Initially this work is directed to satisfying the one request, however the methods utilized can later be used to prepare a slope data base for the entire State.
2. Much additional data has been received. This material and its implementation status is as follows:
 - a. Terrain data exists for approximately 95% of the surface of Alabama. The remainder has not yet been acquired from the Army Map Service. This set of data contains five separate elements of elevation material; maximum, minimum, average, centroid, and standard deviation. Detailed

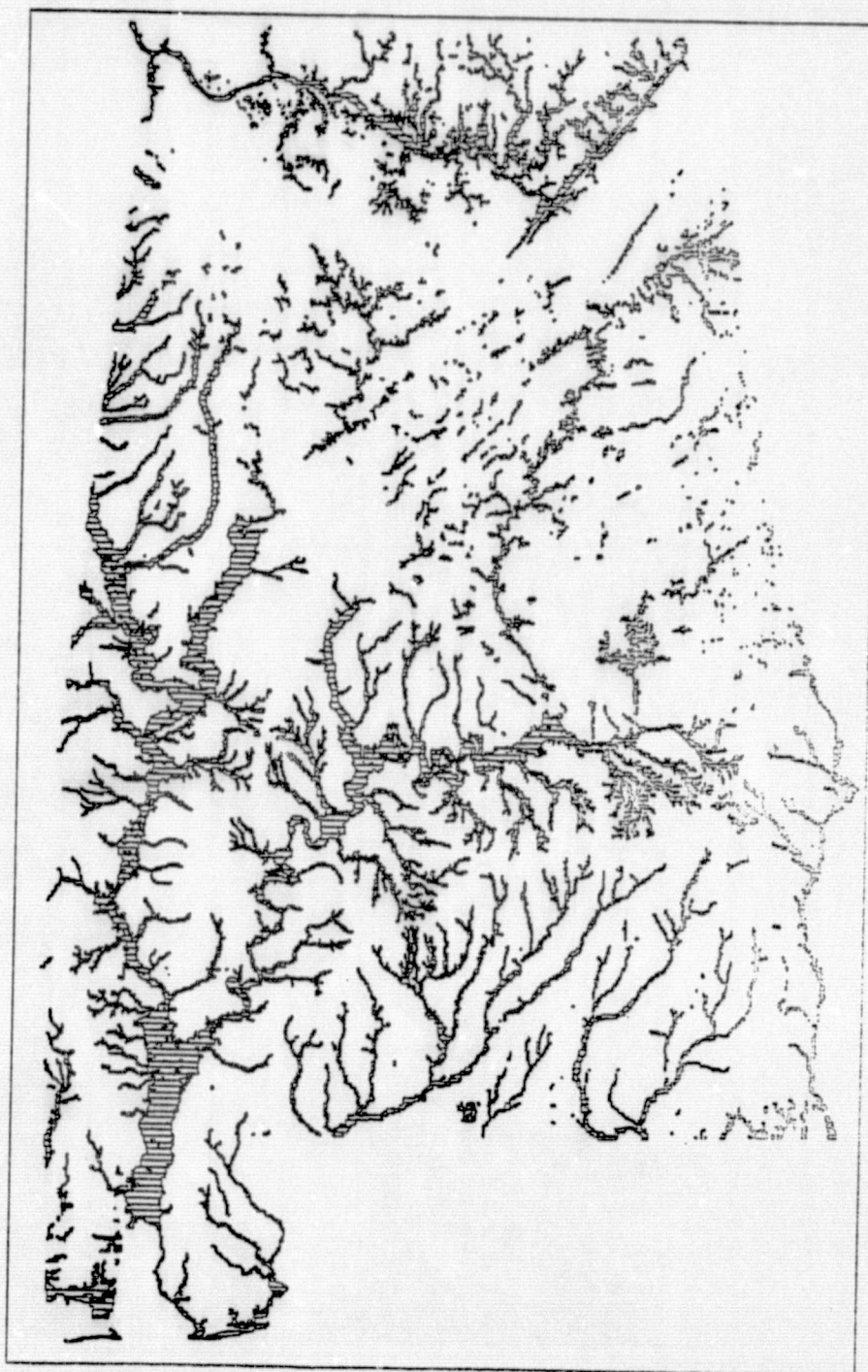


Figure 1. Alabama 100 Year Flood Plains

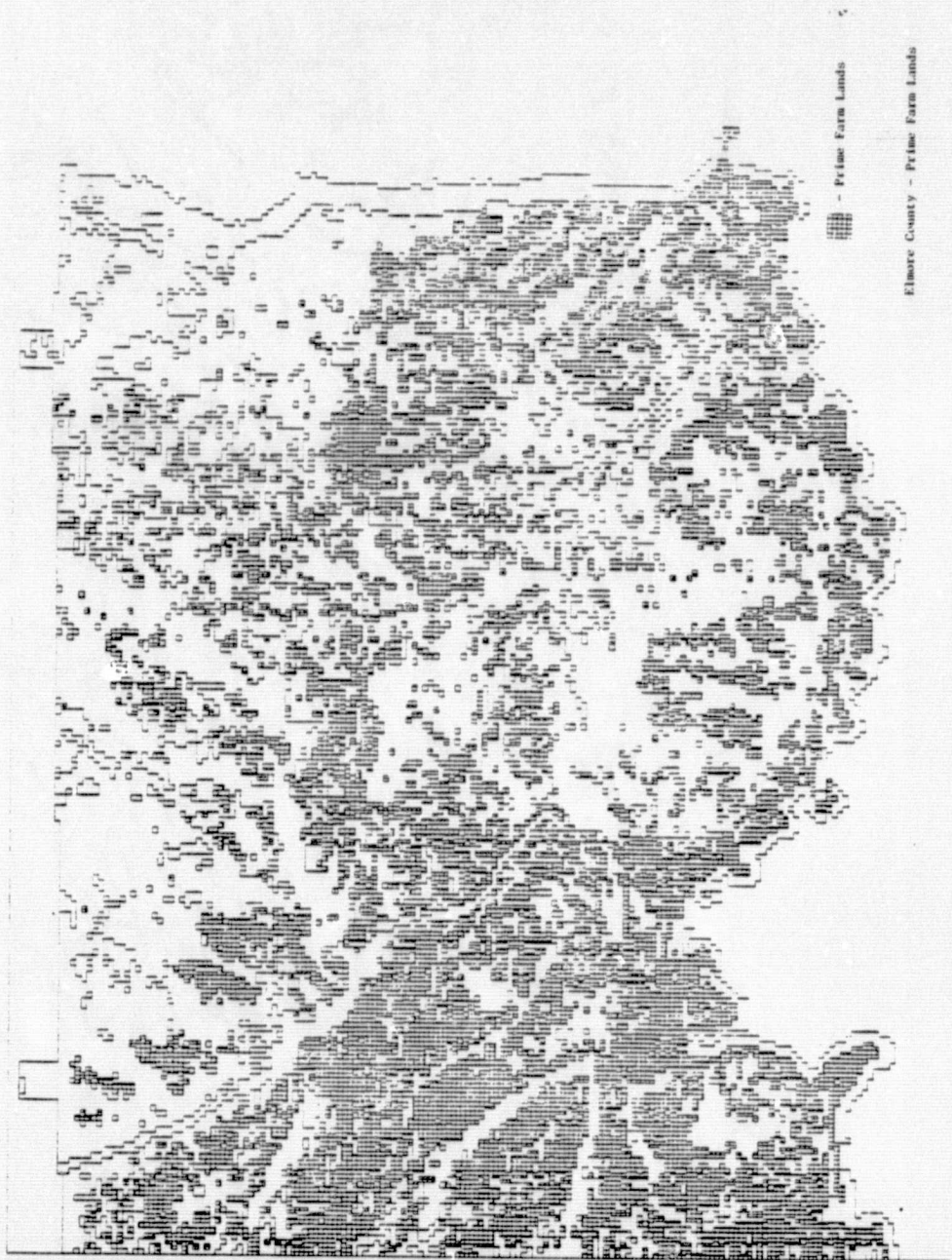


Figure 2. Location of Prime Farm Lands
in Elmore County

ORIGINAL PAGE IS
OF POOR QUALITY

ORIGINAL PAGE IS
OF POOR QUALITY



Figure 3. Location of Other Agricultural Lands in Elmore County

comparisons of the resulting computer displays and the 1:250,000 U.S.G.S. source maps have been excellent. Figures 4 and 5 provide illustrations of plotted digital centroid elevations and a U.S.G.S. 1:250,000 source map, respectively, for a portion of the Birmingham east quadrangle.

- b. Encoding and data base creation has been completed for the Alabama Transportation Data Base. Included in this file are the various inland and intercoastal waterway channels, locations of airports having scheduled air service, certain rail lines, and the major highways and interchanges.
- c. Part of the Land Use/Land Cover series of data being provided by the U.S.G.S. has been received. ARIS personnel are continuing to encounter difficulty with making transformations of the data into the UTM coordinate system. For a very long period of time, available Auburn computer processing storage was severely limited. A recent upgrading of both the capacity and quantity of disk units has eliminated that problem. Conversion efforts are continuing.

IV. SOFTWARE

It has become apparent that development of software will be a continuing ARIS task. Most of this software is of a one time nature used to perform minor conversions of data form. A brief rundown of some of the software developed or under development during the contract period follows:

- a. The ARIS preprocessor or user aid program has been operational for several months. Thorough testing has been completed and preparation of a manual describing user procedures is under way. It is presently expected that only ADO will actually operate ARIS procedures from a remote location. All computer software and data bases are vulnerable to accidental damage. Central control of ARIS use can reduce the risk of accident and improper use. As many know, computers, while fast, are not very "smart". It is easy to know enough to use one, but an experienced user is less likely to obtain useless, but thought to be good, information by improperly mixing software and data. An example of workable, but useless information would be attempting to find prime farmlands but accessing a bedrock geology base rather than a detailed soil series base. Nothing but the reputation of the user and ARIS would be damaged, although that could cause serious harm.
- b. A procedure for evaluating port siting alternatives developed by personnel at the Regional Economic Development Center at Memphis State University has received some attention. This procedure has been adopted for running on an Auburn computer, adapted for evaluating alternative industrial park sites (whether on a waterway or not), and for remote terminal access in batch operating

ORIGINAL PAGE IS
OF POOR QUALITY

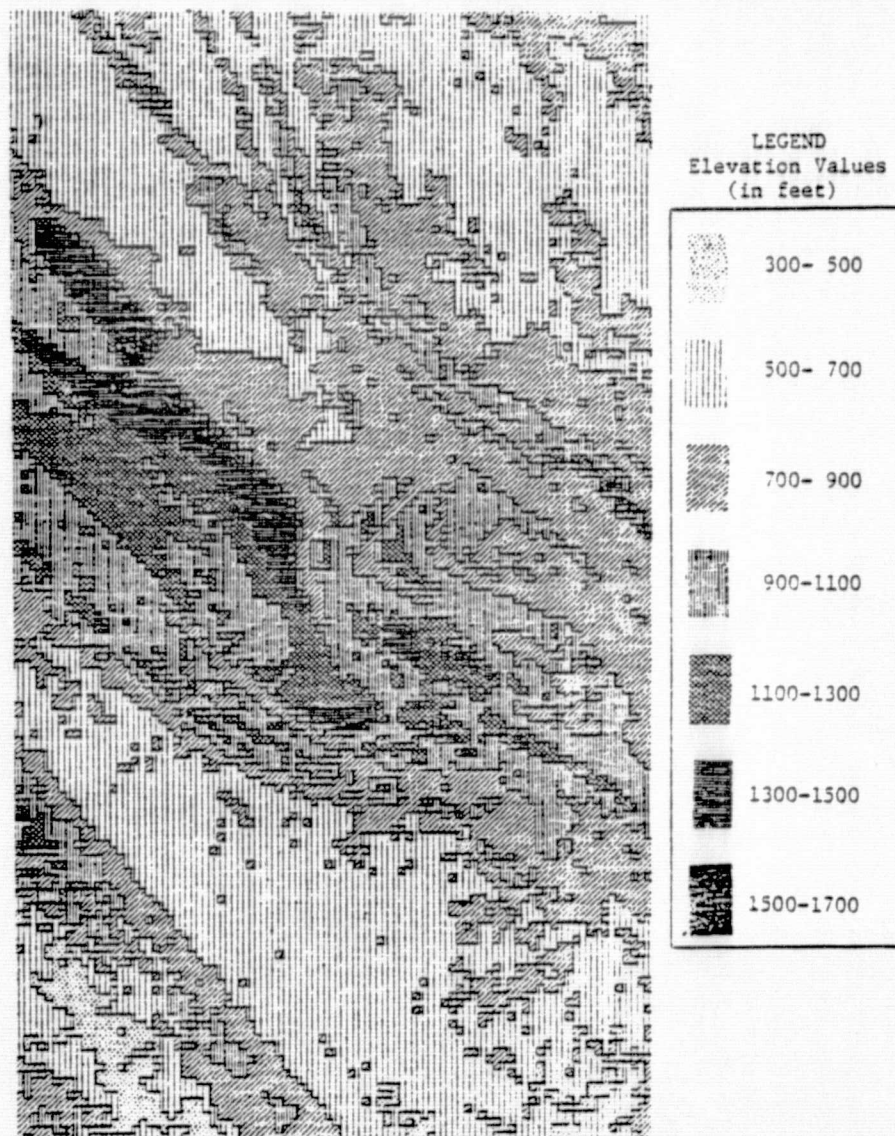


Figure 4. Plotter Produced Display Of
Digitizer Surface Elevations

ORIGINAL PAGE IS
OF POOR QUALITY

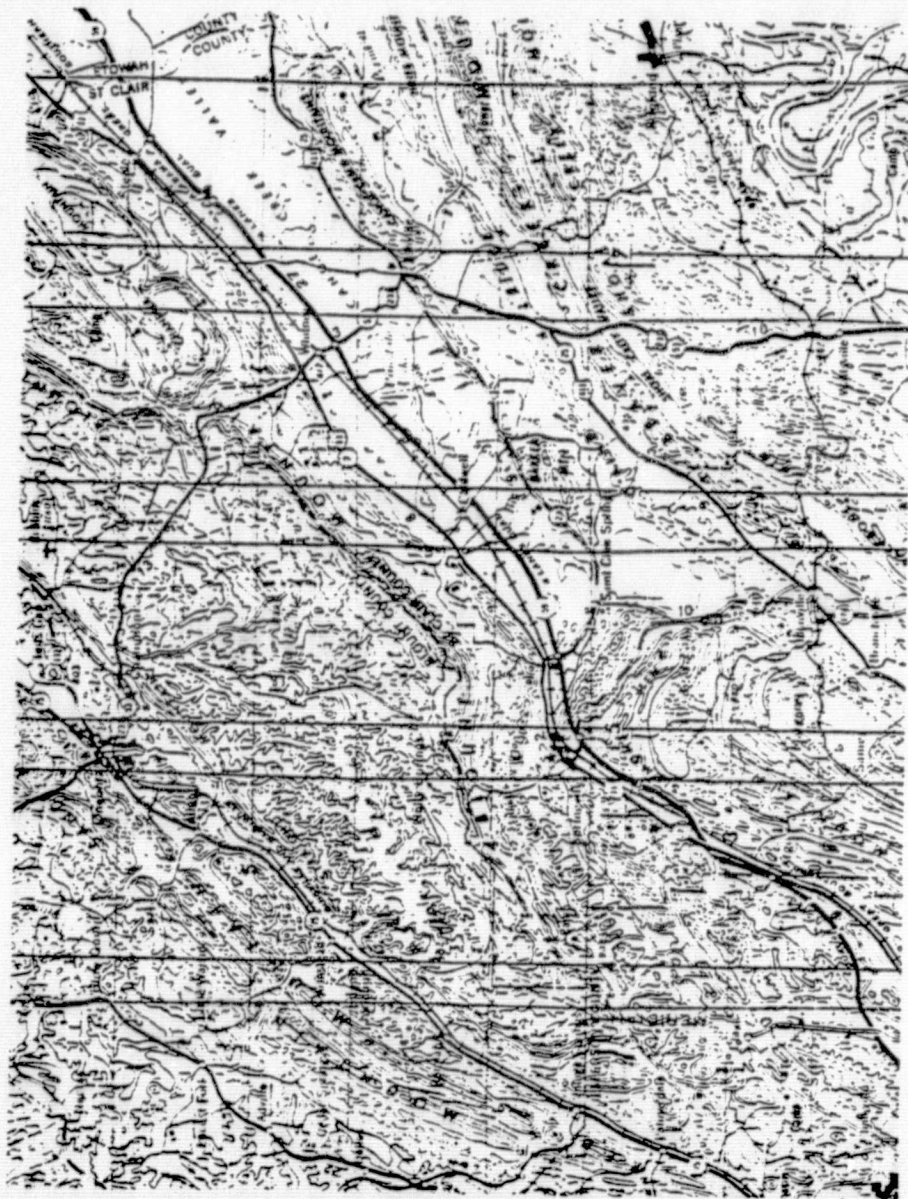


Figure 5. Portion of U.S.G.S. 1:250,000 Map
Shown in Computer Display of
Figure 4

mode. A copy of the documentation of both the model structure and using procedures is available from ADO.

- c. An addendum to the ARIS manual, USE OF THE ARIS CENSUS DATA BASE, has been completed. A copy is included as Appendix C. This package of information provides the detailed user instructions necessary for remote terminal access to the census data base procedures. While the processing of these procedures is batch, both input submission and output display is possible from a remote location.
- d. ARIS polygon oriented processing (AUTOMAP) has received much use during recent months. Figure 6 illustrates printer based output from this process. A procedure has been completed to permit remote, interactive terminal access to this subsystem. Hard-copy terminal output is similar to that produced by a printer. Terminal output at six lines per inch gives a less dense appearance than the eight line per inch printer displays. A copy of the user manual for terminal use of AUTOMAP is included as Appendix D. Figure 7 shows such a display being produced on a terminal.
- e. A large number of small programs have been produced to reformat, convert and/or edit/check received data. A major example relates to the soil series data bases. Each group of data received is oriented to a single county, is alphabetic rather than numeric in content, and requires much checking for correctness. Small programs are prepared (or modified) for each county. This type of task is likely to occur frequently.
- f. Auburn University has recently acquired plotting software from Tektronix Inc. This software has been incorporated in a manner which permits the previewing of data bases which have been created for output on the Versatec electrostatic printer. In other words, plots such as shown in Figures 1, 2, and 3 can be displayed on a Tektronix Graphic Computer Terminal. Such displays can be acquired at locations, such as Montgomery, Alabama, which are remote to the computer. As of this writing, user oriented procedures are being developed to permit early ADO receipt of preview plotter mappings. User instructions, such as contained in Appendices C and D, will be prepared and given limited distribution to ADO.
- g. Arrangements have recently been completed (November 1978), whereby soil series data digitized by the TVA for those Alabama counties in the TVA service area will be made available to the ARIS project. Software development has been started that will accurately convert this material from the 3.75 arcsecond by 3.75 arcsecond grid utilized by TVA, to the UTM system upon which ARIS is based. In this particular situation, an ARIS grid of 250 meters square will be the major output. These conversions will provide a major growth in the area of Alabama for which ARIS accessible detailed soils data will exist.

ORIGINAL PAGE
OF POOR QUALITY

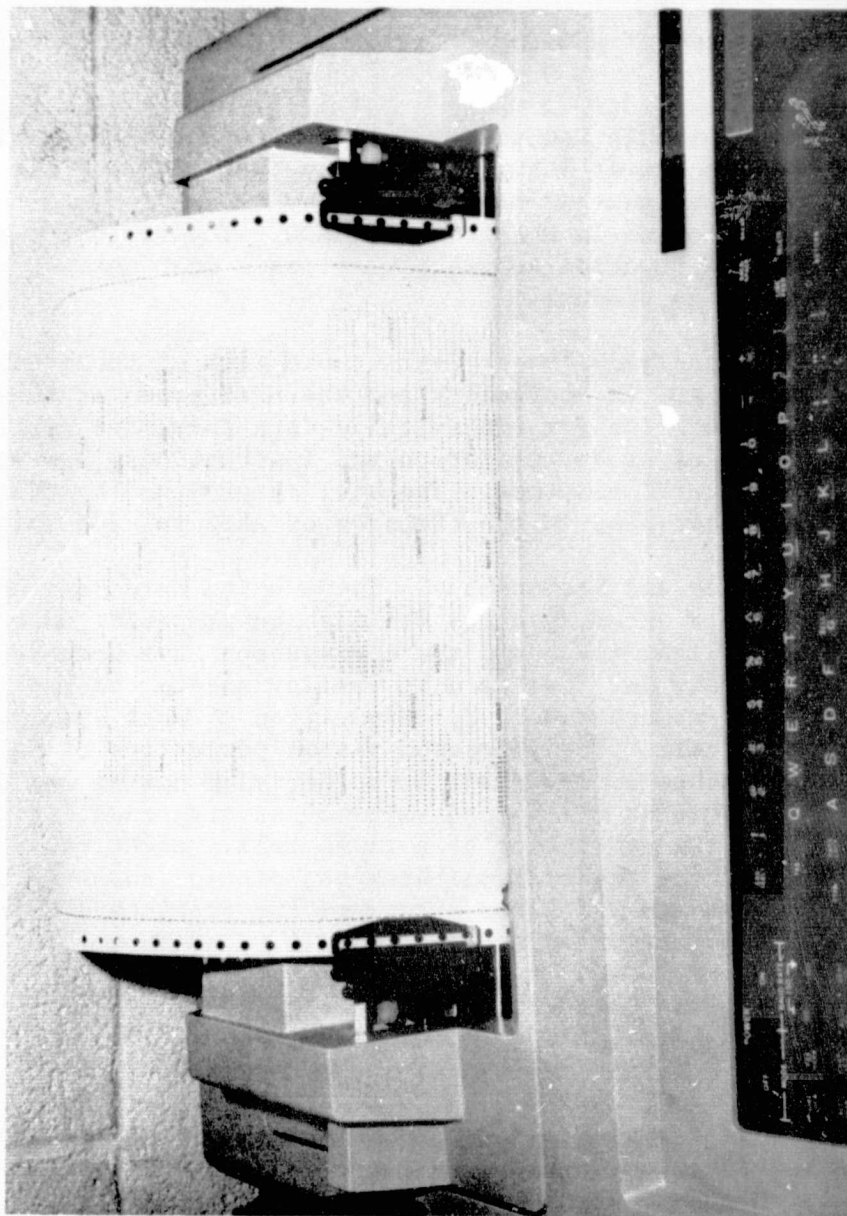


Figure 7. ARIS Polygon Map Being Displayed on a Remote Terminal

V. GOVERNMENT FURNISHED EQUIPMENT

The several items of equipment furnished by NASA and the utilization thereof is as follows:

- a. Tektronix Graphic Computer Terminal. As noted in section 4f., this unit, which is in use at Auburn University, has become a very valuable tool. It is hoped that another model 4002A may be surplus and become available for installation in Montgomery at ADO. The graphic terminal coupled with the preview function software provides a most useful, early visual display of a map product.
- b. Portable Facsimile Transceivers. One each of these units have been installed at ADO in Montgomery and the ARIS group at Auburn. The system has received much use for transmitting data forms for system submission, early, review copies of documentation and instructions, and various correspondence requiring quick response. The utility provided by this equipment has met a significant need in the transfer of ARIS related information.
- c. Light Tables and Stereoscope. These units have been entered into the various data encoding steps utilized in preparing input material for ARIS. The large light table and the stereoscope have been installed at ADO in Montgomery for fitting grid overlay sheets and maps and then providing for a more precise determination of what data value pertains to what data cell. The increased visual perception of values and cellular boundaries has improved the human decision making ability especially when determining which data value of several conflicting ones best describes the attributes of a given cell. Light table use at Auburn is related to the tasks of matching map pieces, checking the completeness of received and processed data, and the short term loan of one of the tables for data encoding tasks.

VI. FUTURE

The ARIS project, initiated by NASA's summer design studies, has reached a fairly visible level of usefulness. It has been shown that the timely and interrelated planning information necessary for orderly, optimal development is available through ARIS procedures and proper data bases. Increasing use of ARIS is evident through the earlier mentioned arrangements with BLM, CARPDAC, and SCS. The useful display of sometimes complex statistical data through the AUTOMAP procedures (Figure 6) has also generated a large amount of potential user interest.

Several major tasks are currently pending. These include: (1) a major effort to gather, encode and store environmental data in ARIS usable data bases (Corps of Engineers), (2) completion of the digitizing and ARIS storage of land use/land cover data (USGS), (3) processing, conversion and ARIS

storage of LANDSAT data, and (4) a detailed study of the extent, effect, and problems of ground water use in Alabama. All point to a major role for the ARIS system in making useful studies and supplying important information. Installation of remote terminal facilities in Montgomery will accelerate ARIS use and stimulate the development of improved methods.

The broad collection of software and data, which is ARIS, has been developed slowly. Wide dissemination of information about the capability of the system has been accomplished carefully. No serious failures to produce have occurred. Had much publicity and resultant heavy, early demand for service occurred, ARIS would have hopelessly failed. Data collection, for various reasons, has been slow. An early demand for mapped or tabular output from non-existent files would have created an image of inability to produce.

Use demand has grown with system capability; a fantastic combination.

Appendix B., referenced earlier, contains enlargements of several slides which are part of a presentation on ARIS. A brief narrative describes each illustration. Other than those containing introductory artwork, these illustrations depict output material prepared for various users of ARIS.

APPENDIX A

ARIS DATA BASES

Provided by and for the Central Alabama Regional Planning and Development Commission

| <u>Data Bases</u> | <u>Autauga</u> | <u>Elmore</u> | <u>Montgomery</u> |
|--|----------------|---------------|-------------------|
| Bedrock Geology | X | X | X |
| Bearing Strength of Bedrock Formations | X | | X |
| Ground Water Availability | X | X | X |
| Soil Associations | X | X | X |
| Detailed Soil Series | * | X | X |

* presently being encoded

APPENDIX B

This appendix contains enlargements of fourteen of the slides which have been used in a technical presentation on ARIS. A description of the figures follows:

| Figure | Description |
|--------|--|
| 8. | The symbol used for ARIS on the covers of manuals and in presentations. |
| 9. | Artwork introducing the section concerned with grided data bases and grid based processing and mapping. |
| 10. | This figure depicts a map being produced on a computer printer. Printer produced maps display data groupings through overprinting with various character combinations to create "gray tones." This process quickly and relatively inexpensively produces proof copies of the results of data input or manipulation. After suitable mapping on the printer has been obtained, the more pleasing, but expensive plotter produced maps are printed. |
| 11. | This figure illustrates a map produced on the plotter unit. In particular, this map displays the location in Elmore County of the soil types having various potentials for aquifer use. The darker map symbols represent the higher aquifer potentials. |
| 12. | This plotter produced map displays the location in Elmore County of the subsurface rock formations having aquifer potential. The darker map symbols represent the higher aquifer potentials. |
| 13. | This figure displays the result of combining the data bases used to produce the maps shown in Figures 11 and 12. According to the planners who requested these mappings, the selected soil types and subsurface rock formations when combined in nature, form possible aquifer recharge areas. This map displays the location of these aquifers in Elmore County. In the coding symbology used, the darker the symbol, the better the aquifer recharge area. |
| 14. | Artwork introducing the section of ARIS which utilizes polygon based data. |
| 15. | This figure contains a photographically reduced display of unemployment statistics. The material was mapped on a computer printer using ARIS areamap (polygon) procedures. |
| 16. | Artwork introducing the portion of ARIS which utilizes the several census data bases. |

| Figure | Description |
|--------|---|
| 17. | This figure illustrates the use of a remote terminal to prepare an information request set for use of a census data base. |
| 18. | This figure shows the result of a use of the census data base. Output from ARIS census processing is tabular in nature. |
| 19. | Artwork introducing the ARIS user aid processing procedures. The user aid program is an interactive procedure which guides a user in the proper combining of software elements and data bases to form a batch job. All commonly used grid base processing can be accessed through the user aid program. |
| 20. | This figure illustrates user interaction with the user aid program. The shaded areas on the terminal paper show the location and quantity of human involvement in what is essentially a question and answer dialogue. |
| 21. | This figure shows a printer produced display of the map which resulted from the dialogue portrayed in Figure 20. The particular information shown in this figure is a portion of Tennessee River flood plains in north central Alabama. |

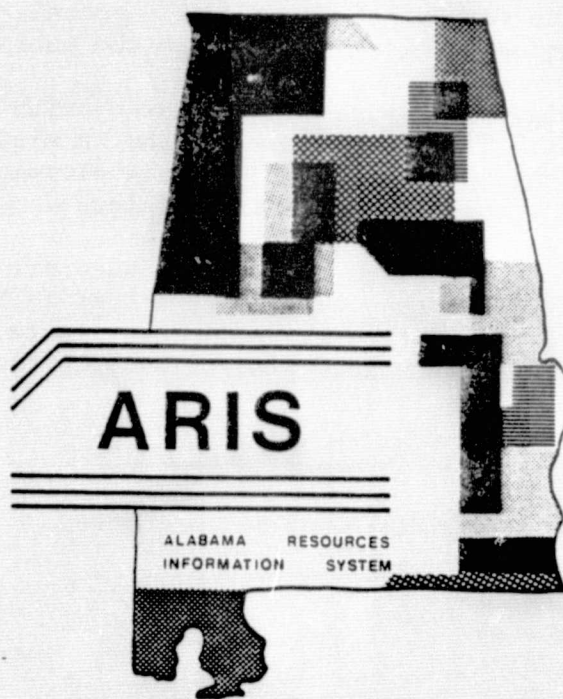


Figure 8

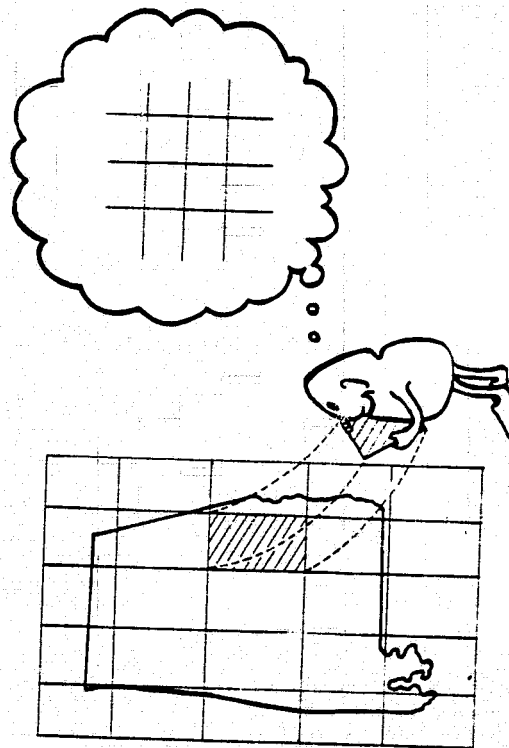


Figure 9

ORIGINAL PAGE IS
OF POOR QUALITY



Figure 10

ORIGINAL PAGE IS
OF POOR QUALITY

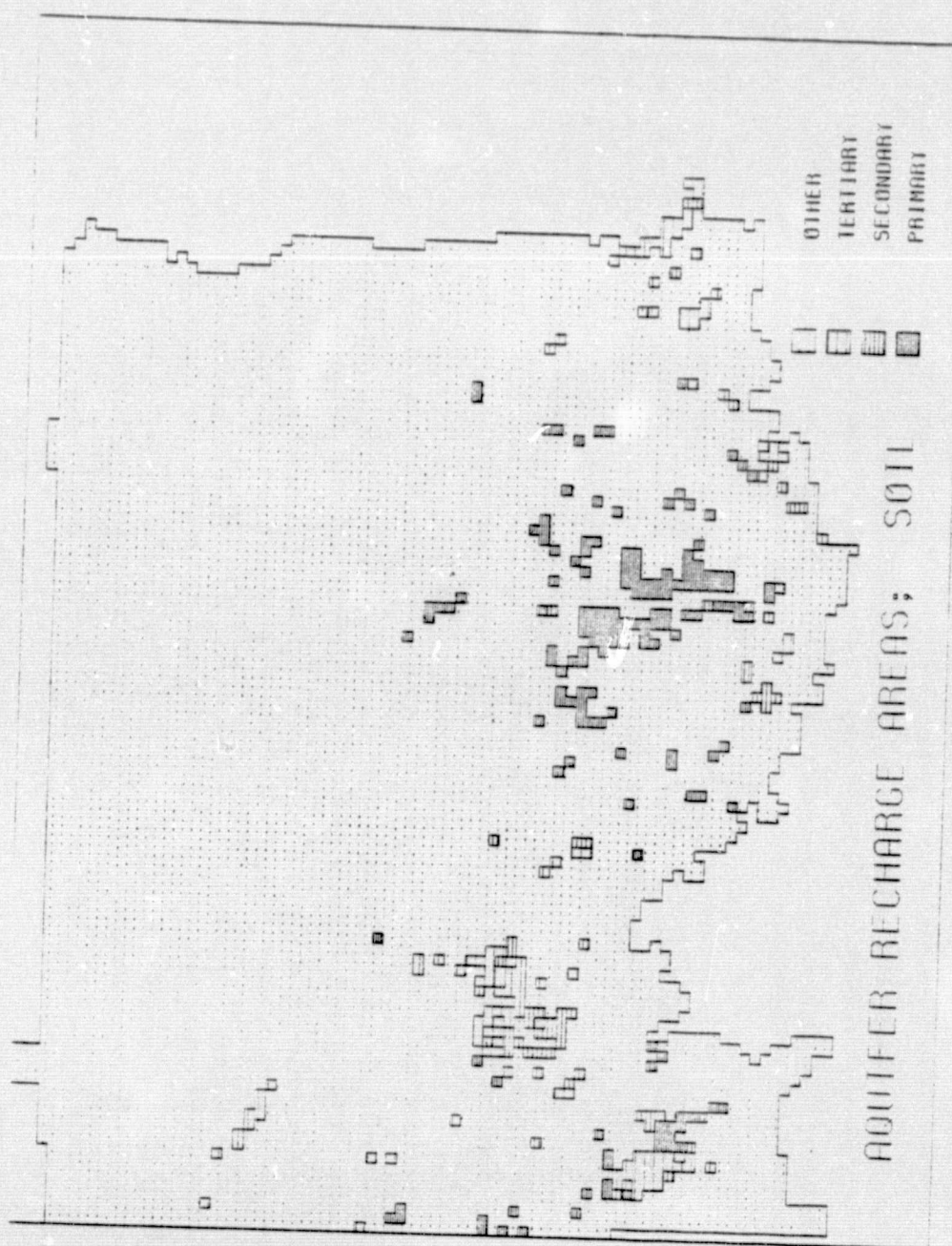


Figure 11

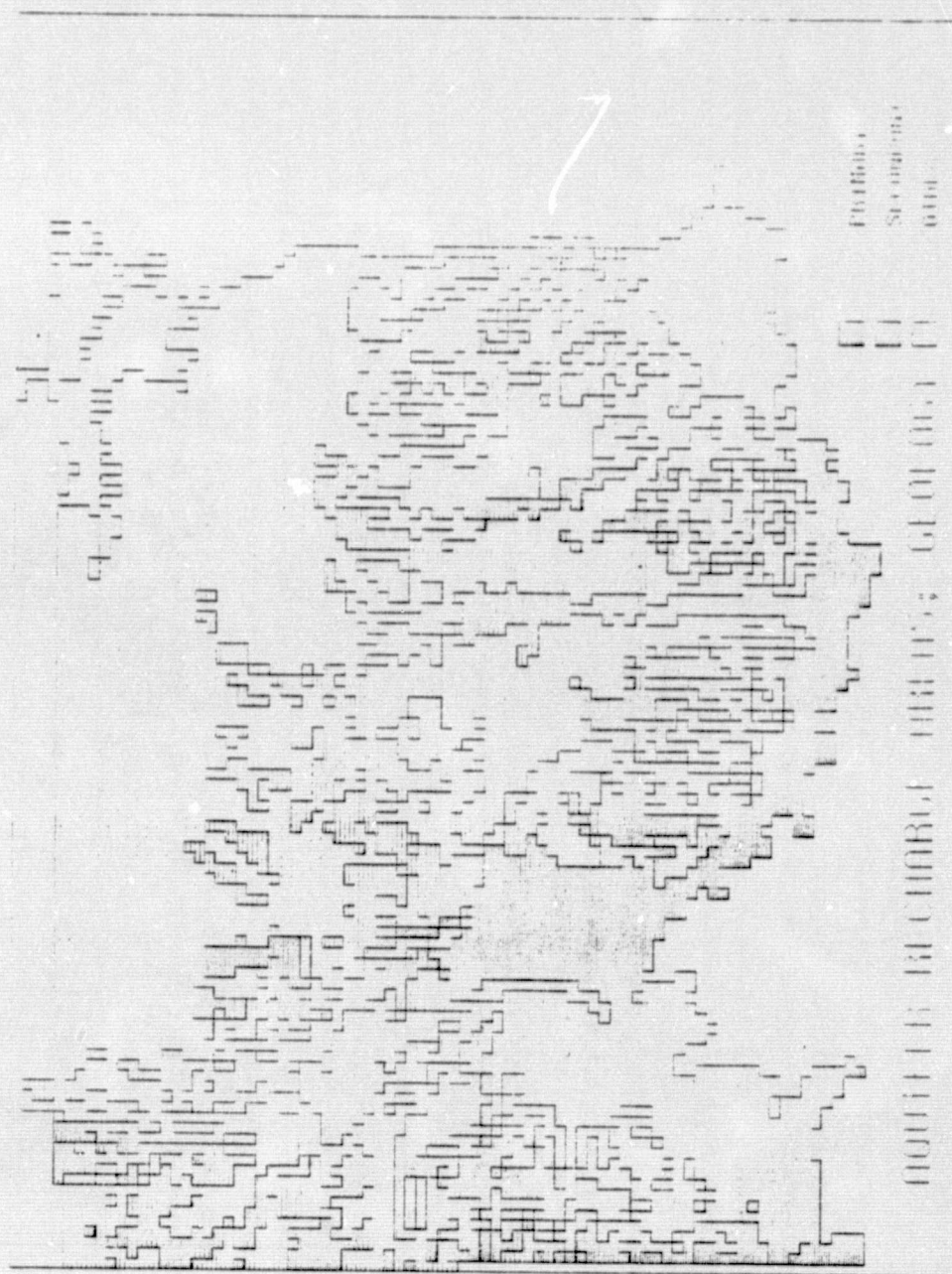


Figure 12

ORIGINAL PAGE IS
OF POOR QUALITY

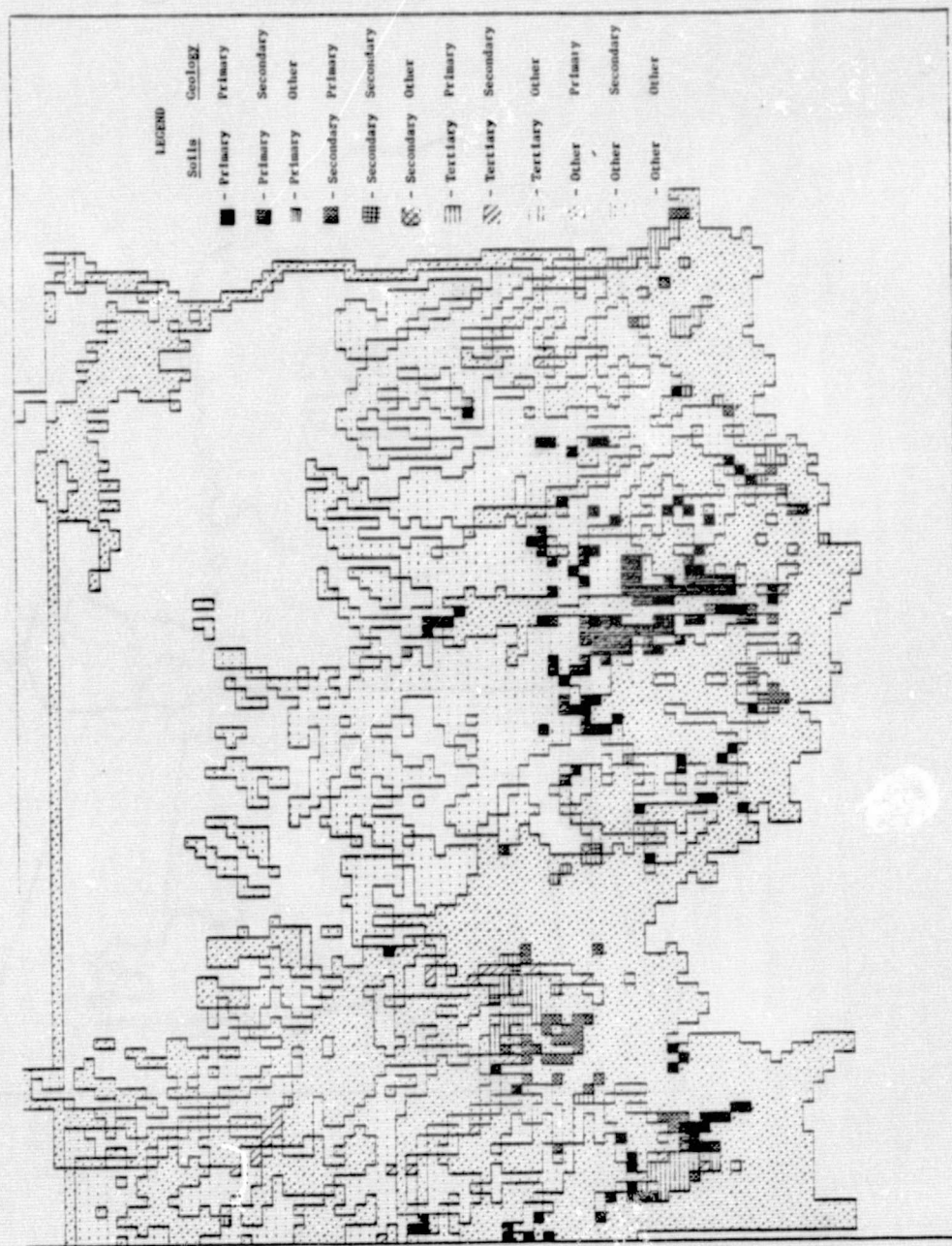


Figure 13

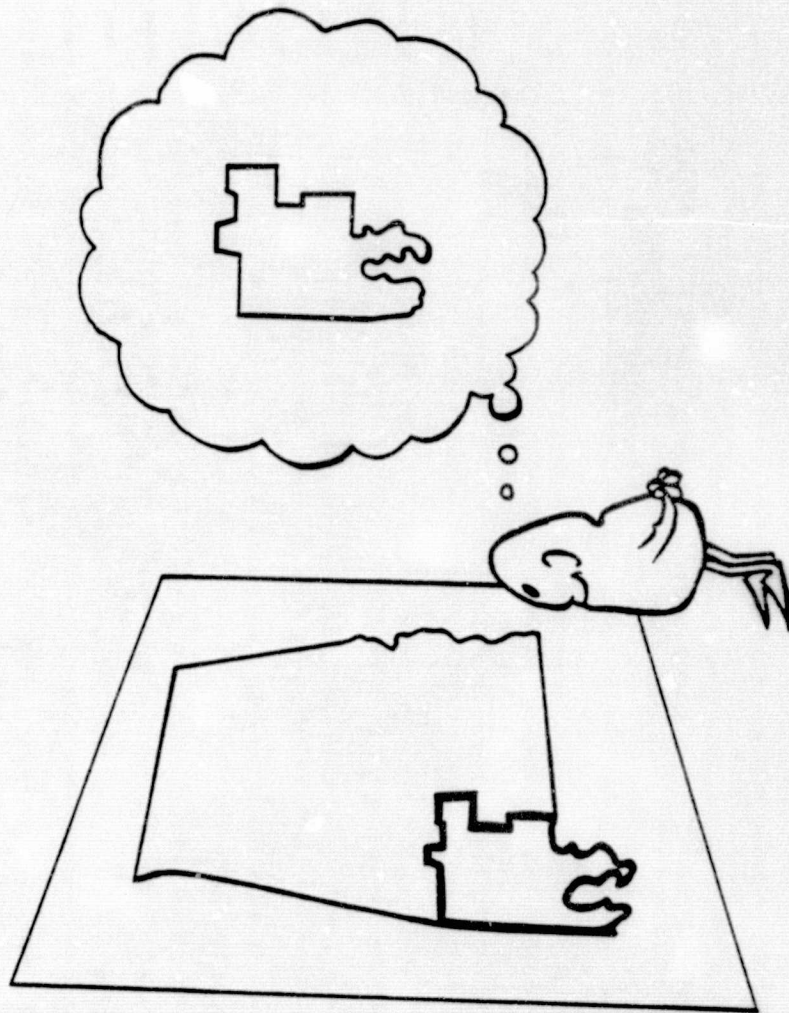
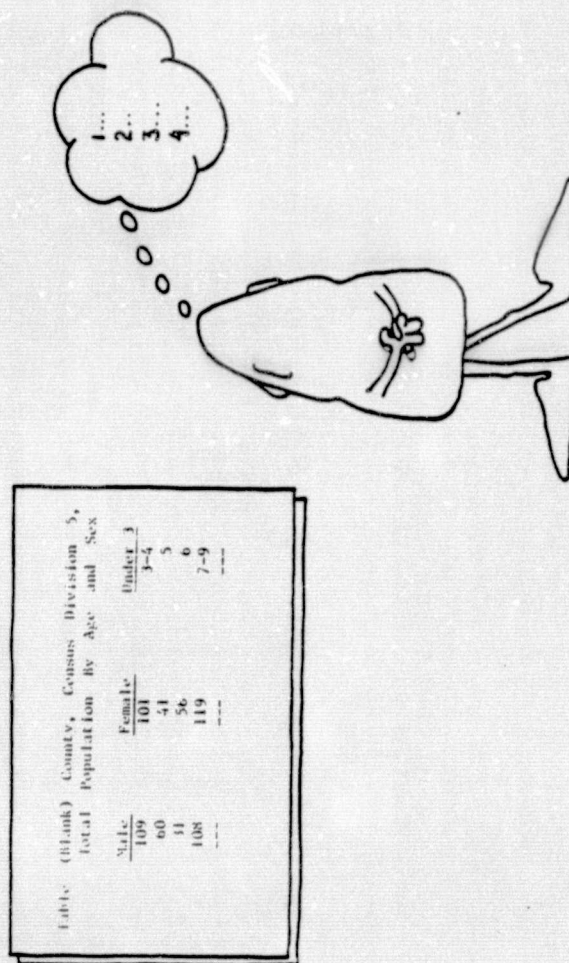


Figure 14

ORIGINAL PAGE IS
OF POOR QUALITY



Figure 15



ORIGINAL PAGE IS
OF POOR QUALITY

Figure 16

ORIGINAL PAGE IS
OF POOR QUALITY

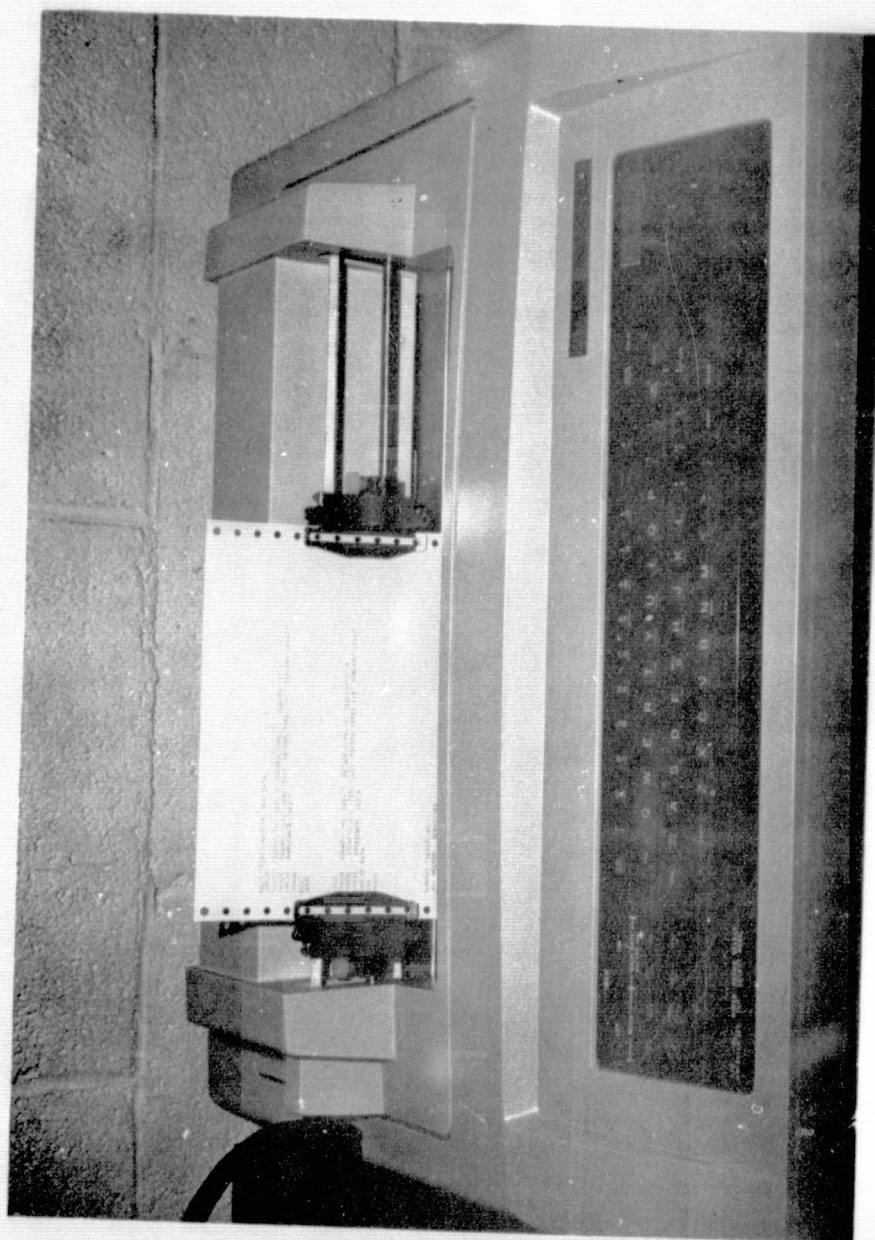
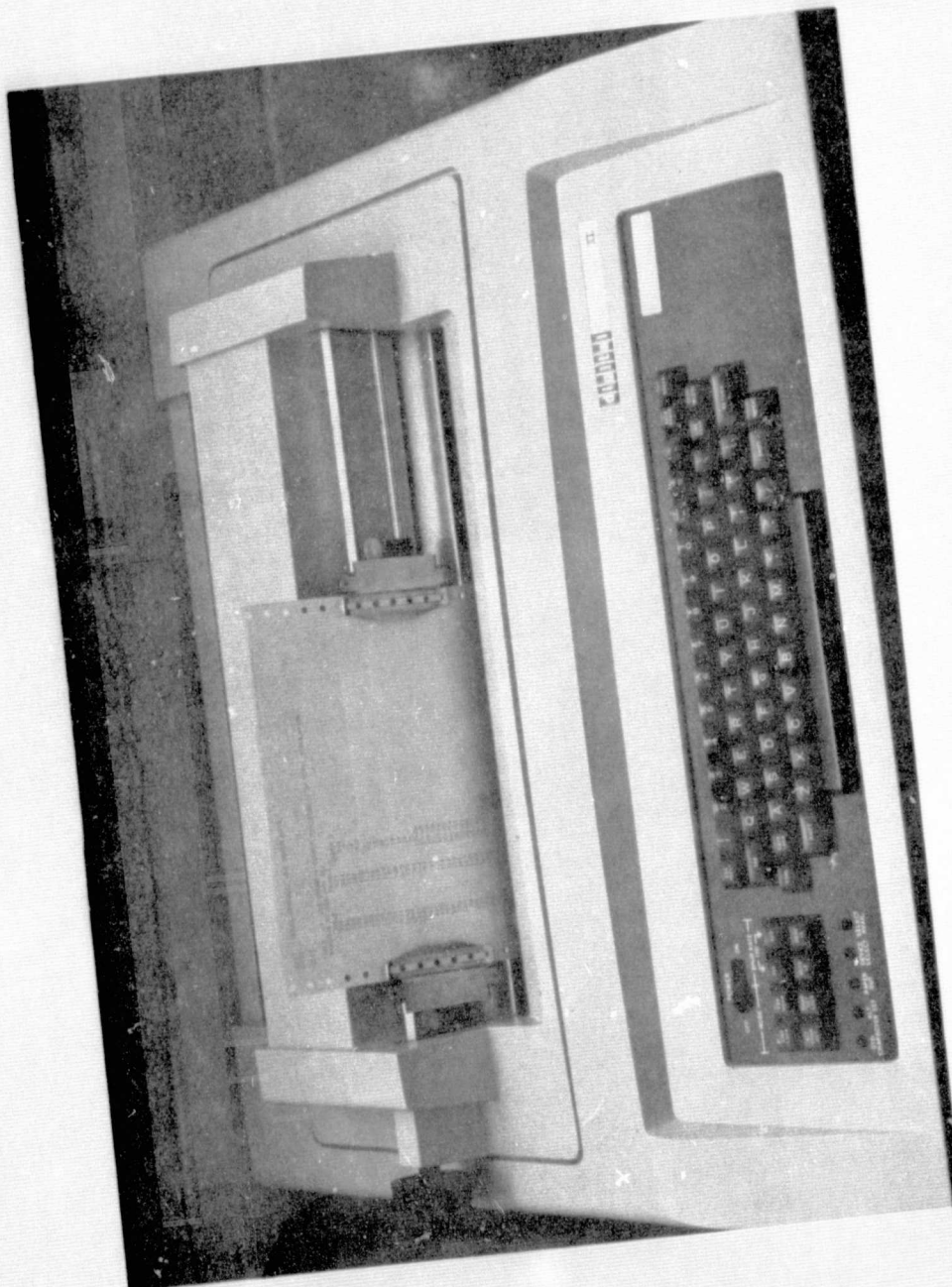


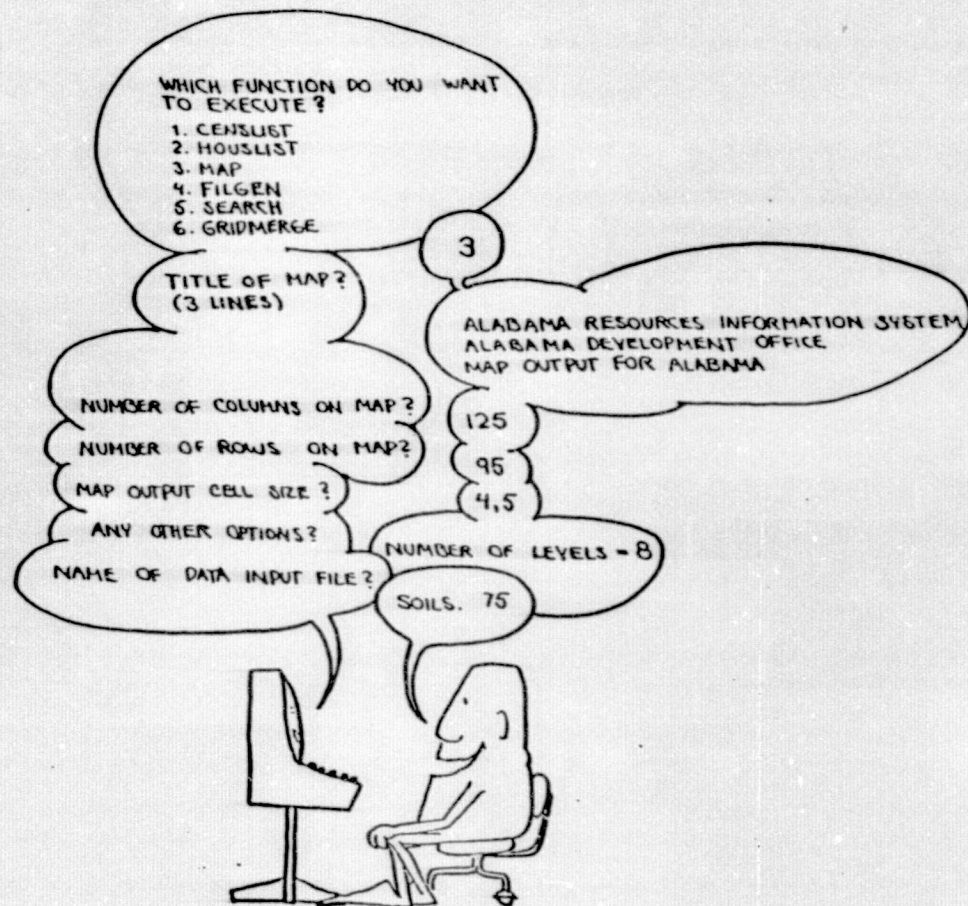
Figure 17



ORIGINAL PAGE IS
OF POOR QUALITY

Figure 18

Figure 19



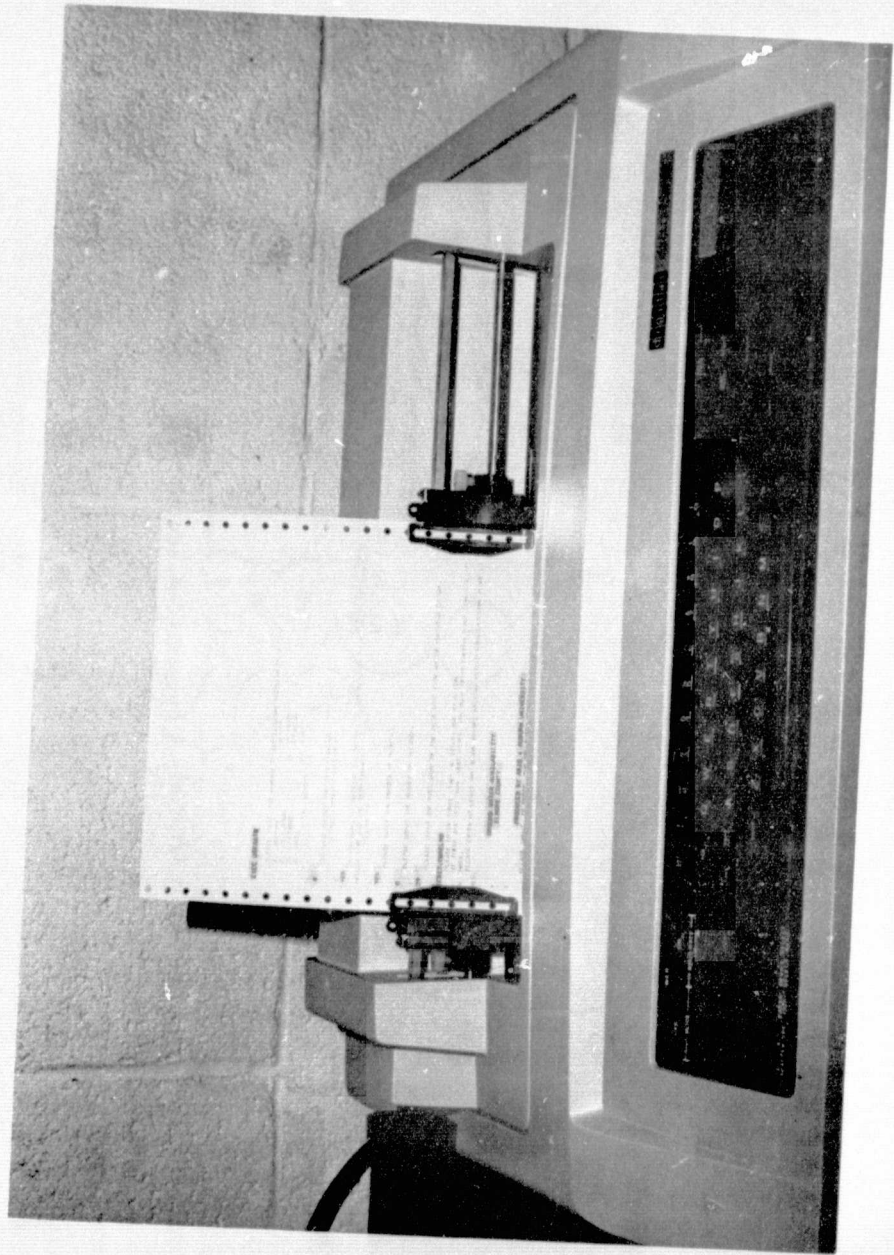


Figure 20

ORIGINAL PAGE IS
OF POOR QUALITY

ORIGINAL PAGE IS
OF POOR QUALITY

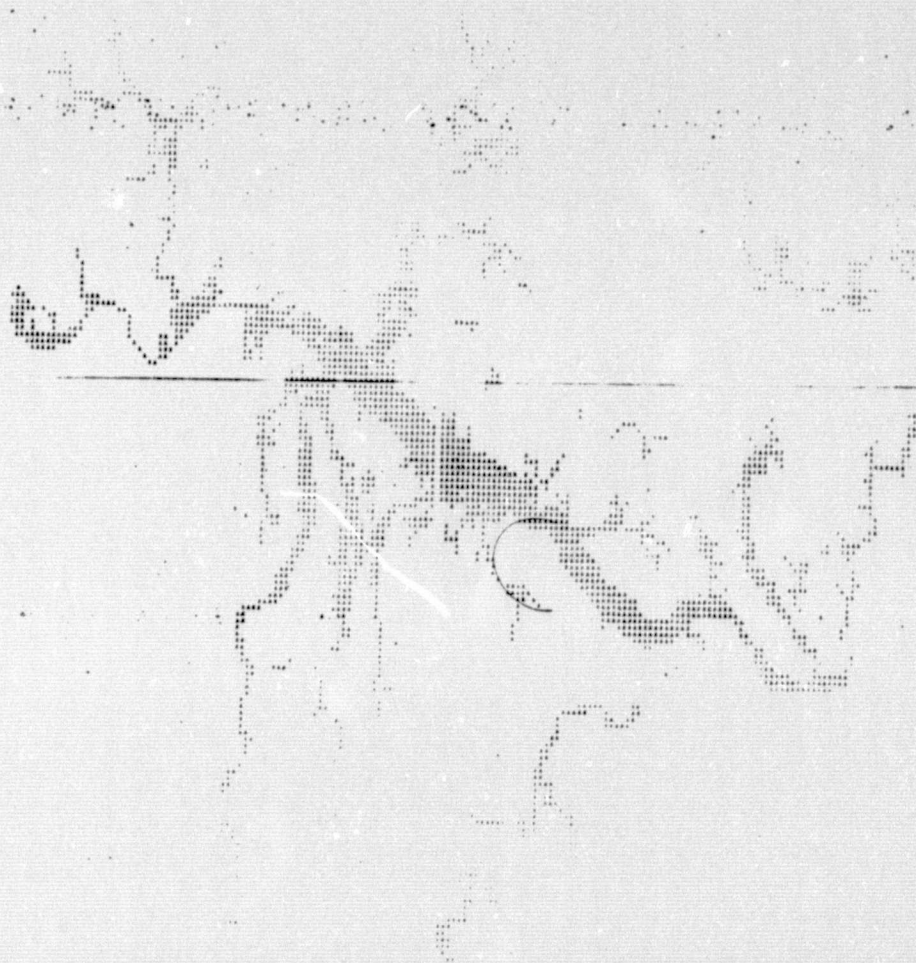


Figure 21

PRECEDING PAGE BLANK NOT FILMED

APPENDIX C

ADDENDUM TO: USE OF THE ARIS CENSUS DATA BASE

This attachment presents the user steps required to access the ARIS Census Data Bases from a remote terminal. It should be noted that only one user can be utilizing these procedures at a time. It is intended that only personnel of the Alabama Development Office will execute these procedures. Should any other organization have a need for this service, with the concurrence of ADO, a similar procedure will be developed. This constraint is emphasized because two or more users simultaneously executing these precise procedures will severely interrupt the efforts of the others.

PREPARATION FOR DATA BASE USE

The user should review appropriate sections of the manual USE OF THE ARIS CENSUS DATA BASE. Use of the population procedures should be preceded by review of Procedures for using CENSLIST beginning on page 12. For use of the housing procedures, review the section entitled Procedures for using HOUSLIST beginning on page 20. Both sections discuss the concept of constructing a request set. Preparatory work for remote terminal access does not differ from access using punched cards. In fact, the only difference is that the user will key the request set or sets at a terminal rather than key them at a card punch machine. The format of the request set is identical for both methods. The user should "think of" a punched card as a single line of type on the terminal. After the necessary request set(s) has (have) been structured on a piece of paper, the remote connection to the computer can be efficiently utilized. Because of heavy afternoon and evening academic use of the Auburn University computer facilities, it is strongly recommended all remote ARIS access be performed during the morning hours. Afternoon use can be attempted, however user frustration may occur due to an inability to acquire a telephonic connection with the computer.

SYSTEM LOGON

The logon procedure is (assuming use of a DECWRITER hardcopy terminal).

- a. Turn on the terminal.
- b. Be certain the HDX/FDX and the 300 (baud) buttons are in the depressed and locked position.
- c. Be certain the coupler is turned on and set on half (slide switches are located on the back or power cord end of the unit).
- d. Dial * on the ACTS system. This calls the Auburn computer. When the computer answers, it presents a medium pitch, steady tone. Insert the telephone hand piece into the rubber rings on the coupler. The telephone cord should be at the coupler power cord end.
- e. Type three capital letter Ø's and depress the RETURN key twice. If a good connection has been made the words ENTER LOGON will be displayed. If not, hang up the phone and repeat beginning at step d above. The symbol Ø represents the letter O. Type O, not Ø or 0 on the terminal.
- f. Type () represents a blank space)

LOGONØIED13CC

and then depress the RETURN key.

* System use is coordinated by ADO. Contact ADO for access permission.

- g. The computer's portion of the logon operation requires from a few seconds to several minutes to complete. During this period, the terminal will be essentially idle, although it may display some broadcast messages to users. It is recommended that one periodically note the carrier light on the coupler to make certain it remains on. This light glows when the carrier tone (the computer's answering sound) is on. Should it go off, the telephone connection has failed and the user should return to step d above. Finally, the word READY will be displayed on the terminal. The user is now logged on and can proceed to use the various ARIS remote procedures.
- h. Type

```
TERMINAL/LINESIZE(133)
```

and depress the RETURN key. This converts the terminal from a 72 character line width to the full width of the on-line printers in use with Auburn's computer. Most ARIS printed output is oriented to this larger line width.

FILE CREATION

This activity is concerned with keying the entries forming the request set or sets for execution of the consus procedures. This is accomplished by establishing the input data set required for processing by the software.

To create the population oriented input data set, type

```
EDIT/IED13.ADPIN/NEW/DATA/NONUM
```

and depress the RETURN key. The terminal will respond with the word, INPUT. The user merely types the request set entries to conform to the CENSLIST section of the manual (pages 12-19). Depress the RETURN key after each line. After the last portion of the last request set has been typed, depress the RETURN an extra time. This causes an exit from the INPUT mode. Type SAVE and depress the RETURN key. Next, type LIST and depress the RETURN key. The system will display the entire request set dataset just created. The user should proofread the entries to assure correctness. Should an error be noted it must be corrected. For example, suppose the request set shown in Figure 3 on page 16 of the manual has been typed using two lines. The dataset listing might appear as:

```
COUNTY='1,1' CCD='5,10'RECORD_TYPE='1,1'
TABLES='16' AGGREGATE='YES';
END OF DATA
```

The keyword AGGREGATE has been spelled incorrectly. A fix can be made by typing

```
LIST *
```

followed by depressing the RETURN key. The asterisk "tells" the system to display the current line. Such response will be

```
TABLES='16' AGGREGATE='YES';
```

Correction of the error can be performed by typing

```
Cb'GRATE'b'GATE'
```

and depressing the RETURN key. The system will automatically display the changed line as

```
TABLES='16' AGGREGATE='YES';
```

To move the internal line pointer either backwards or forwards in the dataset, type

```
UP n or DOWN n
```

where n represents the number of lines the pointer is to move. Suppose it was decided to use CCD 15 rather than CCD 10 in this example. To make such a change, type

```
UPb1
```

and depress the RETURN key. The system will respond with

```
COUNTY='1,1' CCD='5,10'RECORD_TYPE='1,1'
```

Type

```
Cb'10'b'15'
```

and depress the RETURN key.

System response will be

```
COUNTY='1,1' CCD='5,15'RECORD_TYPE='1,1'
```

Should correction involve one or more of the quote(') marks, the user may feel a touch of panic since the quote mark has been used as a marker or delimiter in the change process. To illustrate, suppose the absence of a blank space immediately before the term RECORD_TYPE was considered to be unacceptable (it is not incorrect). One would type

```
LIST *
```

(to be certain the line pointer was still at this line in the dataset) and depress the RETURN key. The system response would be

```
COUNTY='1,1' CCD='5,15'RECORD_TYPE='1,1'
```

Insertion of the space would be accomplished by typing

```
CB/'R/'R/
```

and depressing the RETURN key. System response would be

```
COUNTY='1,1' CCD='5,15' RECORD_TYPE='1,1'
```

If any changes are made, again type SAVE and depress the RETURN key. This will retain the corrected dataset while destroying the incorrect one. Type END and depress the RETURN key to return to the READY mode.

Preparation to utilize the housing procedures is accomplished in a relatively similar manner. To create the housing oriented input database, type

```
EDIT/'IED13.ADOHIN/'NEW/DATA/NO NUM
```

and depress the RETURN key. The terminal will respond by displaying the word INPUT. The user then types request set entries which conform to the HOUSLIST section of the manual (pages 20-24). Saving and correcting the finished dataset is accomplished as outlined above.

JOB EXECUTION

After the dataset IED13.ADOPIN (or IED13.ADOHIN) has been created containing one or more request sets, the computer processing can be started. Execution of the CENSLIST (population) procedures is accomplished by typing (when the system is in the READY mode):

```
SUBMIT/'IED13.JCL'
```

and depressing the RETURN key. To execute the HOUSLIST (housing) procedures, the command to be typed is

```
SUBMIT/'IED13.HJCL'
```

followed by depressing the RETURN key.

Once the submit command has been entered, the job is transmitted to the batch processing area for execution. Depending on workload, the job will be run sometime during the next few minutes to several hours. The user may now logoff from the system or utilize other remote applications of ARIS. If the user maintains the computer connection, it is possible to periodically check the processing status of the job by typing (for a population base job)

```
STATUS/ARIPOP
```

and depressing the RETURN key or by typing (for a housing base job)

```
STATUS/ARIHOUS
```

and depressing the RETURN key. Typical responses to this inquiry and their meanings are:

JOB ARIPOP WAITING FOR INITIATOR

The job is in a waiting line waiting for its turn in the computer processor.

JOB ARIPOP EXECUTING

The job is being run and should be finished in a few minutes.

JOB ARIPOP NOT FOUND

The job has finished and is no longer under control of the computer's operating system. Output from the job was written (or more properly stored) in a temporary file. It is now available for retrieval by the user.

ACQUISITION OF OUTPUT

Retrieval and printing of output from the population base is accomplished by typing the following (and depressing the RETURN after each user typed line):

```
EDIT% 'IED13.ADOPOUT' %DATA%OLD
LIST
```

If additional copies are needed type LIST and depress the RETURN key for each additional copy. After all needed copies have been printed, type END and depress the RETURN key.

Retrieval and printing of output from the housing base is identical to the above except the EDIT command is:

```
EDIT% 'IED13.ADOHOUT' %DATA%OLD
```

MULTIPLE USE OF THE CENSUS PROCEDURES DURING A SINGLE DAY

The census based programs and data bases require vast quantities of expensive, on-line storage during their relatively short execution time. Because of this, virtually all of this material is stored off-line and "read in" only when the procedures are being utilized. A major portion of the actions performed by IED13.JCL (and IED13.HJCL) is concerned with the loading of necessary programs and data bases. After loading, these programs and data bases remain on-line for one day. Should either IED13.JCL or IED13.HJCL be submitted a second time during a twenty-four period, mass confusion is experienced by the computer. To avoid this potential chaos, submission data bases have been established for user access for the second or later runs of CENLIST or HOUSLIST during any given calendar day.

To run a second or subsequent group of census request sets during a given day, the contents of the dataset containing the previously processed request set(s) must be deleted. In the case of population processing, the deletion is accomplished by typing (when in the READY mode):

```
DELETE% 'IED13.ADOPIN'%PURGE
```

Depress the RETURN key to transmit the command. Deletion, in the case of housing processing is similar. The command, followed by depressing the RETURN key is:

```
DELETE% IED13.ADOPIN'%PURGE
```

The user can now create a new file of input request sets in precisely the same manner as discussed in the section on File Creation above. Prior to execution of the computer procedures using the new requests, the prior output must also be deleted. That is accomplished in a manner similar to the deletion of the old input dataset. To delete the old population output file, type:

```
DELETE% 'IED13.ADOPOUT'%PURGE
```

and for the old housing output file, type:

```
DELETE% 'IED13.ADOHOUT'%PURGE
```

In each case, the terminal must first be in the READY mode and the command can be transmitted to the computer only by depressing the RETURN key after the instruction has been typed.

Execution of a second or subsequent group of census request sets is initiated in almost the same manner as presented in the section on Job Execution above. The only difference appears in the submission command. To initiate population processing, type:

```
SUBMIT% 'IED.REJCL'
```

and to initiate housing processing, type:

```
SUBMIT% 'IED.13.POP.JCL.RERUN'
```

The terminal must be in the READY mode prior to typing either of the above commands. As usual, the command is transmitted only by depressing the RETURN key after the line has been typed.

TERMINAL CLOSE DOWN

After all needed copies have been obtained and all census based processing has been completed, the input (request sets) and output (tables) should be deleted. This task is accomplished as described above, by typing (when the terminal is in the READY mode):

```
DELETE dataset PURGE
```

and depressing the RETURN key. Substitute the names of input and output files for the generic "dataset" in the above sample command. The four possibly involved files are:

```
IED13.ADØPIN  
IED13.ADØPØUT  
IED13.ADØHIN  
IED13.ADØHØUT
```

DELETE NO OTHER FILES. To do so could cause much delay while the accidentally destroyed material is being recreated by Auburn personnel.

The final step is to logoff from the computer. This can be accomplished after all remote terminal work has been completed for that day or after all processing has been submitted and the user decides to wait until later that day to retrieve the output. Logoff is accomplished by typing (while in the READY mode):

LOGOFF

Depress the RETURN key to transmit the command. The computer will respond shortly with the message:

```
IED13CC LOGGED OFF TSO AT (time) ON (date)
```

Hang up the phone and turn off the terminal's power switch.

APPENDIX D

TERMINAL INPUT TO ARIS AUTOMAP PROCESSING

This procedure presents the user steps required for the input of data, activation of computer processing of that data, and retrieval of the resultant map from a remote, interactive terminal.

PREPARATION FOR SYSTEM USE

The user should review appropriate sections of the manual AUTOMAP II USERS MANUAL. Primary concern is with pages 25 through 34. Using a form such as the one included in Figure 1, record the various elements of information required to produce the desired mapped statistical display. Detailed instructions for recording the information are contained in subsequent sections of this procedure.

Figure 2 illustrates the new form encoded in a manner similar to the method used previously to prepare a set of unemployment figures for processing. This actual set of data is used to illustrate the encoding and submission of data for the remote terminal operation of ARIS AUTOMAP.

Figure 3 illustrates the same unemployment data as reconfigured for remote terminal operation. The major differences between the terminal based version of AUTOMAP and the more familiar punched card approach have been caused by an absence of carriage locational information on the terminal. The user of many terminals is not able to readily determine the exact left to right position of the printing mechanism. Locational information is very important for nearly all computer processing applications. To enable the user of the ARIS AUTOMAP terminal version to concentrate on data content rather than position, a preprocessing procedure has been written. This new procedure accepts AUTOMAP data which has been keyed according to a relatively free format and converts it to the fixed format of AUTOMAP II. In reality, while the input format of the preprocessor is extremely fixed (or structured), it seems to be less fixed and is certainly more user oriented. Discussing each AUTOMAP package separately, the items are:

1. Range Package

While this package is actually optional, in practice it has always been used in ARIS. It is mandatory in the terminal based version. Place an R in position one of the first line (or write the entire word RANGE in the first five positions). On the second line record the number of levels, the type of interval flag (usually the integer one), the minimum cutoff flag (usually the integer one), and the maximum value. Use commas as separators between the values. The third (and subsequent line of the Range Package) contains the sizes of the various intervals.

ARIS AUTOMAP II CODING FORM

ORIGINAL PAGE IS
OF POOR QUALITY

ORIGINAL PAGE IS
OF POOR QUALITY

Figure 1.

ARIS AUTOMAP II CODING FORM

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
|--------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|-------|---|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|--------|----|----|----|----|----|----|----|----|----|----|-----|----|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RANGE | | | | | | | | | | | | | | | | | | 5 | | | | | | | | | | | | | 0 | | | | | | | | | | | | | 11.9.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 2.9.5 | | | | | | | | | | | | | 3.0 | | | | | | | | | | | | | 3.0 | | | | | | | | | | | | | 7.9.5 | | | | | | | | | | | | | | | | | | | | | | |
| VALUES | | | | | | | | | | | | | | | | | | 6.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 7.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 5.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 8.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 8.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 4.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 6.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 6.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 6.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | : | NOTE: TO CONSERVE SPACE, THE INTERVENING VALUES | | | | | | | | | | | | | | | | | | | | | | | | : | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | : | HAVE BEEN OMITTED FROM THIS ILLUSTRATION. | | | | | | | | | | | | | | | | | | | | | | | | : | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 5.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6.1 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 7.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6.2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 5.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6.3 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 6.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6.4 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 7.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6.5 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 10.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6.6 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 7.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6.7 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 7.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6.8 | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 2

ARIS AUTOMAP II CODING FORM

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
|-------------------|---------------------------|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| MAP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UNEMPLOYMENT RATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JUNE 1978 REVISED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ENDT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 - 2.9% UNEMPLOYMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 3.0% - 5.9% UNEMPLOYMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 6.0% - 8.9% UNEMPLOYMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 9.0% - 11.9% UNEMPLOYMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 12.0% - 47 UNEMPLOYMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| END | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

ORIGINAL PAGE
OF POOR QUALITY

Figure 2 (cont'd)

[illegible]

46

ARIS AUTOMAP II CODING FORM

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
|---------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| . - = # | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1, 2, 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UNEMPLOYMENT RATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JUNE 1978 REVISED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ENDT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 - 2.9% UNEMPLOYMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0% - 5.9% UNEMPLOYMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0% - 8.9% UNEMPLOYMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9.0% - 11.9% UNEMPLOYMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.0% - UP UNEMPLOYMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| END | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

ORIGINAL
COPY
OF
POOR
QUALITY

Figure 3 (cont'd)

There must be six items on each such line. Please note the example in Figure 3. Five intervals were specified on the second line. The third line has only five real intervals, but has a zero for the sixth item. Had that zero been omitted, the preprocessor, which looks for six items per line at this stage of activity, would have taken in the V in the next line as the sixth item. Expecting a number and finding a non-number would have caused the processing to abnormally end. To avoid this occurrence, the user must "fill in" all unused fields in the third and subsequent lines of the Range Package with zeros which are separated by commas. The following table may be useful.

| <u>Number of Intervals</u> | <u>Number of Lines</u> | <u>Number of Zeros on Last Line</u> |
|----------------------------|------------------------|-------------------------------------|
| 1 | 1 | 5 |
| 2 | 1 | 4 |
| 3 | 1 | 3 |
| 4 | 1 | 2 |
| 5 | 1 | 1 |
| 6 | 1 | 0 |
| 7 | 2 | 5 |
| 8 | 2 | 4 |
| 9 | 2 | 3 |
| 10 | 2 | 2 |
| 11 | 2 | 1 |
| 12 | 2 | 0 |

2. Values Package

Place a V in the first position of the first line of the Values Package section (or write the entire word VALUES in the first six positions of the line). In the second line for the package write the number representing the number of values to be entered (this would be 67 when preparing to display county based statistics on the map of Alabama). The item numbers shown in Figure 2 are generated for the user by the preprocessor. On subsequent lines enter each county's (typically) value.

3. Symbols Package

Place an S in the first position of the first line of the Symbols Package section (or write the entire word SYMBOLS in the first seven positions of that line). In the first position of the second line place the digit zero. Beginning in the first position of the third line record the symbol characters to represent the various mapped value ranges. The first position is typically left blank as it is used to symbolize the low values which generally do not appear in the data. The AUTOMAP II procedure requires three more lines of symbols or blanks. The preprocessor generates these lines for the system user.

4. Map Package

Place an M in the first position of the first line of the Map Package section (or write the entire word MAP in the first three positions of the line). The second line should have the integer one placed into the first position, a comma placed into the second position, and another integer one placed into the third position. The third and subsequent lines (which will contain the map title) are completely free format. This means the user can place anything any place on any line. The last line of this section must have the code word ENDT in the first four positions.

5. Level Text Package

Use of this package requires two lines for each level. The first line of each line pair is reserved for recording the level number in the initial position or positions (if a two digit number) of the line. The second line of each line pair is to contain the text material for that line (see Figure 3). The last line of this package is to contain the integer 99 recorded in positions one and two of the line.

6. General

Multiple mappings can be performed by restarting with the range package. This is accomplished by recording an R in the first position of the next line after the one containing the 99 (or by placing the word RANGE in the first five positions of that line) and then repeating all of the above packages. When all mappings have been recorded, place the letters END in the first three positions of first line after the line containing the 99. Once the forms have been filled in, the remote connection to the computer can be efficiently utilized. Because of heavy afternoon and evening academic use of the Auburn University computer facilities, it is strongly recommended all remote ARIS access be performed during the morning hours. Afternoon use can be attempted, however user frustration may occur due to an inability to acquire a telephonic connection with the computer.

7. System Logon

The logon procedure is (assuming use of a DECWRITER hardcopy terminal):

- a. Turn on the terminal.
- b. Be certain the HDX/FDX and the 300 (baud) buttons are in the depressed and locked position.
- c. Be certain the coupler is turned on and set on half (slide switches are located on the back or power cord end of the unit).
- d. Dial * on the ACTS system. This calls the Auburn computer. When the computer answers, it presents a medium pitch, steady tone. Insert the telephone handpiece into the rubber rings on the coupler. The telephone cord should be at the coupler power cord end.

* System use is coordinated by ADO. Contact ADO for access permission.

- e. Type three capital letter Ø's and depress the RETURN key twice. If a good connection has been made the words ENTER LOGON will be displayed. If not, hang up the phone and repeat beginning at step d above. The symbol Ø represents the letter O. Type O, not Ø or 0 on the terminal.
- f. Type (Ø represents a blank space and is input to the terminal by depressing the space bar)

LOGONØIED13CC

and then depress the RETURN key.

- g. The computer's portion of the logon operation requires from a few seconds to several minutes to complete. During this period, the terminal will be essentially idle, although it may display some broadcast messages to users. It is recommended that one periodically note the carrier light on the coupler to make certain it remains on. This light glows when the carrier tone (the computer's answering sound) is on. Should it go off, the telephone connection has failed and the user should return to step d above. Finally, the word READY will be displayed on the terminal. The user is now logged on and can proceed to use the various ARIS remote procedures. An example of possible display during the computer's portion of the logon phase is:

IED13CC LOGON IN PROGRESS AT 16:53:34 ON OCTOBER 18, 1978
NO BROADCAST MESSAGES
READY

8. AUTOMAP By Terminal

The user first acquires access to the interactive procedure by typing:

EXECØAREAMAPØ'IED13.COUNTY.TERM'

and then depressing the RETURN key. This action will trigger a burst of generally meaningless display chatter from the computer. Most of the output may even appear threatening to the user. It will likely contain numerous comments such as NOT FREED and NOT ALLOCATED. An example of possible such output is as follows:

FILE UNIT5F2 NOT FREED, IS NOT ALLOCATED
FILE FT08F001 NOT FREED, IS NOT ALLOCATED
FILE FT09F001 NOT FREED, IS NOT ALLOCATED
DATA SET IED13CC.AMAPPROG.FORT NOT FREED, IS NOT ALLOCATED
ATTR-LIST-NAME AMAP NOT FOUND
ATTR-LIST-NAME ARIS NOT FOUND
DATA SET /IED13CC.AREAMAP.DATA/ NOT IN CATALOG
DATA SET /IED13CC.AREAMAP.FILE9/ NOT IN CATALOG

FILE FUNLIB NOT FREED, IS NOT ALLOCATED
 FILE WATLIB NOT FREED, IS NOT ALLOCATED

/JOB HERRING, TIME=8, NOLIST

/GO

00000010

00000860

INPUT DATA

Most of this chatter can be likened to a quarrelsome person who grumbles when things are not in their proper order. As the system finds things not to its liking, it grumbles and then makes the item right. It is normal for small amounts of time to elapse between each of the above notations. Finally, the last item, INPUT DATA will be displayed. At that moment, terminal control is returned to the user and line-by-line input of the material previously recorded on forms such as illustrated in Figure 3 can be started.

Each line of data on the form should be typed onto a separate line on the terminal. Typing must start at the leftmost end of the terminal and be followed by depressing the RETURN key to transmit the line to the computer. Be certain to include all punctuation marks such as commas which have been written on the form. Depress the space bar once for each blank space used in the map title and map legend sections. If any blank lines are to be included in the map title, indicate that blank line to the computer by typing at least one blank space before using the RETURN key. After transmission of the last item of data (END), the data format conversion program will finish execution and cause certain execution diagnostics to be displayed. This display includes items such as those appearing on the fourth through the ninth lines in Figure 4. After this display, the user must type and transmit the characters

/*

At this time terminal control will be taken by the computer. Such control will be retained while the map computations are performed and the finished map or maps are displayed at the terminal. AUTOMAP II computations are begun almost immediately after the word END is typed and the RETURN key is depressed. After a very short time, the terminal will begin to display the following:

AUTOMAP II - AREA MAP PROGRAM

ALABAMA DEVELOPMENT OFFICE

ALABAMA RESOURCE INFORMATION SYSTEM

STATE CAPITOL, MONTGOMERY, ALABAMA 36130

The standard AUTOMAP II will follow, including output from the Range and Values packages and then the map, map title, and map legend.

/*

ERROR END OF FILE ENCOUNTERED ON UNIT 5 (IBM CODE IHC217)
PROGRAM WAS EXECUTING LINE 6 IN ROUTINE M/PROG WHEN TERMINATION OCCURRED
CORE USAGE OBJECT CODE= 8136 BYTES,ARRAY AREA= 168 BYTES,TOTAL AREA
AVAILABLE= 73824 BYTES
DIAGNOSTICS NUMBER OF ERRORS= 1, NUMBER OF WARNINGS= 0, NUMBER OF EXTENSIONS= 0
COMPILE TIME= 0.15 SEC,EXECUTION TIME= 0.13 SEC, WATFIV - VERSION 1 LEVEL 3 MARCH 1971 DATE= 78/291
/STOP

AUTOMAP II - AREA MAP PROGRAM

ALABAMA DEVELOPMENT OFFICE
ALABAMA RESOURCE INFORMATION SYSTEM
STATE CAPITOL, MONTGOMERY, ALABAMA 36130

IHC2181 FIDOS - I/O ERROR IED13AA ,LOG ,24B,DA,FT05F001,READ ,WRNG.LEN.REC
ORD,0000012C000200,BSAM
//JGRSIM3 JOB (IE134,CC),/ROGERS/,CLASS=W 00000010
/*ROUTE PRINT RMT3

| TRACEBACK | ROUTINE CALLED FROM ISN | REG. 14 | REG. 15 | REG. 0 | REG. 1 |
|-----------|-------------------------|----------|----------|----------|----------|
| IBCOM | | 002B14C8 | 002B4CE8 | 00000000 | 002B1454 |
| MAIN | | 00009B7A | 012B0B98 | 002DFFF8 | 002DACC4 |

ENTRY POINT= 012B0B98

STANDARD FIXUP TAKEN , EXECUTION CONTINUING

KEY // NOT VALID

| SUMMARY OF ERRORS FOR THIS JOB | ERROR NUMBER | NUMBER OF ERRORS |
|--------------------------------|--------------|------------------|
| | 218 | 1 |

READY

Figure 4

As each line of typed data is transmitted to the computer by depressing the RETURN key, that line of data is immediately reformatted for input to AUTOMAP II. If a typing error is made, that error becomes a part of AUTOMAP II input. Should the user make an error and recognize the fact, the characters /* should be typed on the next line and transmitted (by depressing the RETURN key). A great quantity of material will almost immediately be displayed. An example of such output is contained in Figure 4. All of this material can be ignored. When the READY (last line in Figure 4) appears, the user should restart at section 8 above by typing

```
EXEC%AREAMAP%IED13.COUNTY.SCALED'
```

and depressing the RETURN key. Similarly, a user error which is detected by the system, will result in a great flurry of output display. The user should depress the BREAK key and restart at section 8 above. On occasion, electronic noise on the telephone line will cause poor transmission of data. In this case, the system will state that the previous transmission was not properly received and request that it be re-entered. When this situation occurs, retype and transmit the previous entry.

Should any unusual situations or problems arise, call Auburn at 923-4340 on the ACTS system for assistance.

9. Terminal Close Down

After all ARIS terminal based processing has been completed for the session, the user should logoff from the computer. Logoff is accomplished by typing (while in the READY mode):

```
LOGOFF
```

Depress the RETURN key to transmit the command. The computer will respond shortly with the message:

```
IED13CC LOGGED OFF TSO AT (time) ON (date)
```

Hang up the phone and turn off the power switch on both the terminal and the acoustic coupler.